

The opinion in support of the decision being entered today was **not** written for publication in a law journal and is **not** binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TSUEN-HSI LIU, DEMETRI PSALTIS,
FAI H. MOK, and GAN ZHOU

Appeal No. 1998-1472
Application No. 08/427,721

ON BRIEF

Before HAIRSTON, KRASS, and BARRY, Administrative Patent Judges.
BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the rejection of claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, 142-144, 151-153, 164-166, 168, 171 and 174-178. We affirm-in-part.

BACKGROUND

The invention at issue in this appeal relates to optical disk storage. Typically, 650 MB of data can be stored on a

compact disk-read only memory (CD-ROM). Although this storage capacity suffices for some audio and computer applications, it does not suffice for high-resolution video applications.

The inventive optical disk drive stores and reads data by creating and detecting, respectively, the presence of holographic gratings in an optical disk. A holographic grating is an interference pattern created in a holographic medium forming all or part of the optical disk. Specifically, a plane-wave beam and a counter-propagating, focused beam are used to create the holographic gratings in the medium.

In one embodiment of the invention, the presence of a holographic grating within a data storage location of the disk indicates a first binary state, whereas the absence of such a grating indicates the second binary state. In other embodiments, the holographic gratings are created with varying diffraction efficiencies. The variance in diffraction efficiency distinguishes holographic gratings associated with the same point of focus. This in turn allows the holographic gratings to represent "n-ary" or analog-valued data.

The storage capacity of the inventive optical disk exceeds that of existing, commercially available CD-ROM. In addition, some embodiments of the invention can employ a conventional CD-ROM disk drive, thereby taking advantage of the mature technologies associated with these devices.

Claim 151, which is representative for our purposes, follows:

Claim 151. A method for reading data from an optical disk, the disk being comprised of a material in which a holographic grating may exist at plural locations within the disk wherein the holographic grating represents a stored data element, the method comprising the step of:

reading data elements using an electro-optical head by detecting one of (i) a presence, or (ii) an absence of a holographic grating at the plural locations within the disk, using a plane-wave light beam.

The references relied on in rejecting the claims follow:

Takeda et al. (Takeda)	4,021,606	May 3, 1977
Bjorklund et al. (Bjorklund)	4,458,345	July 3, 1984
Murakami	4,761,775	Aug. 2, 1988

5,322,747

June 21,

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection advanced by

the examiner. Furthermore, we duly considered the arguments and evidence of the appellant and examiner. After considering the totality of the record, we are persuaded that the examiner erred in rejecting claims 1-3, 34, 35, and 178 under 35 U.S.C. § 102(b) and in rejecting claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, 144, and 153, 164, 165, and 174-178 under 35 U.S.C.

§ 103(a). We are also persuaded that he did not err in rejecting claims 142, 143, 151, 152, 166, and 168 under 35 U.S.C. § 102(b) and in rejecting claims 142, 143, 151, 152, 166, 168, and 171 under 35 U.S.C. § 103(a). Accordingly, we affirm-in-part. Our opinion addresses the following issues:

- novelty of claims 1-3, 34, 35, and 178
- nonobviousness of claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, and 174-178
- grouping of claims 142, 143, 151, 152, 166, 168, and 171
- anticipation of claims 142, 143, 151, 152, 166, and 168
- obviousness of claims 142, 143, 151, 152, 166, 168, and 171
- nonobviousness of claims 144 and 153
- nonobviousness of claims 164 and 165.

Novelty of Claims 1-3, 34, 35, and 178

We begin by noting the following principles from Rowe v. Dror, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997).

A prior art reference anticipates a claim only if the reference discloses, either expressly or inherently, every limitation of the claim. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "[A]bsence from the reference of any claimed element negates anticipation." Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

With these principles in mind, we consider the appellants' argument and the examiner's reply.

The appellants argue, "the aforementioned figure [6] and associated description in Takeda indicate that the object beam and reference beam used to create holograms on the optical disk are closer to being co-propagating, rather than counter-propagating, as claimed" (Appeal Br. at 11.) The examiner replies, "the reference beam 25' and the other focused beam of Takeda are directed from different directions

to be made incident upon the same area 1 of the optical disk
23. Thus, they are considered to be counter-propagating beams
as claimed." (Examiner's Answer at 5.)

"[T]he main purpose of the examination, to which every
application is subjected, is to try to make sure that what
each claim defines is patentable. [T]he name of the game is
the claim'" In re Hiniker Co., 150 F.3d 1362, 1369,
47 USPQ2d 1523, 1529 (Fed. Cir. 1998) (quoting Giles S. Rich,
The Extent of the
Protection and Interpretation of Claims--American
Perspectives, 21 Int'l Rev. Indus. Prop. & Copyright L. 497,
499, 501 (1990)). Here, claims 1-3 each specify in pertinent
part the following limitations: "creating the holographic
grating at any one of the plural locations within the disk via
a plane-wave light beam in conjunction with a
counterpropagating focused light beam." Similarly, claims 34,
35, and 178 each specify in pertinent part the following
limitations: "creating a holographic grating at selected ones
of the plural locations within the disk using a plane-wave

light beam in conjunction with a counterpropagating focused light beam."

The adverbial prefix "counter" is defined as "in an opposite direction" Webster's Third New International Dictionary 518 (1971) (copy attached). Based on this definition, the claimed term "counter-propagating focused light beam" means that the focused beam travels in a direction opposite to that of the plane-wave beam. Accordingly, claims 1-3, 34, 35, and 178 each require using light beams that travel in opposite directions to create a holographic grating.

The examiner fails to show a disclosure of the limitations in the prior art. "The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not ... resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis."

In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967).

Although Takeda teaches forming a hologram 1 using an object beam 25 and a reference beam 25', col. 6, ll. 15-19, the beams do not travel in opposite directions. To the contrary, the object beam 25 and the reference beam 25' travel in similar directions. Specifically, figure 6 of the reference shows that both beams travel from the same beam splitter 24, col. 6., l. 67, - col. 6, l. 1, to the same side of disk 2. Col. 6, ll. 15-19.

Because Takeda shows beams traveling in similar directions, we are not persuaded that the reference discloses the claimed limitations of "creating the holographic grating at any one of the plural locations within the disk via a plane-wave light beam in conjunction with a counterpropagating focused light beam" or "creating a holographic grating at selected ones of the plural locations within the disk using a plane-wave light beam in conjunction with a counterpropagating focused light beam." The absence of this disclosure negates anticipation. Therefore, we reverse the rejection of claims 1-3, 34, 35, and 178 under

35 U.S.C. § 102(b) as anticipated by Takeda. Next, we address the nonobviousness of claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, and 174-178.

Nonobviousness of Claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, and 174-178

We begin by noting the following principles from In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993).

In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).... "A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Bell, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

With these principles in mind, we consider the appellants' argument and the examiner's reply.

The appellants argue, "the combined teachings of Bjorklund and Takeda lack the plane-wave light beam and counterpropagating focused light beam elements claimed" (Appeal Br. at 11.) The examiner replies, "As previously argued above, Takeda does in fact disclose a plane-wave reference beam 25'. Further, Bjorklund, like the arguments presented for Takeda, does in fact teach a counter-propagating focused beam #1." (Examiner's Answer at 6.)

Like claims 1-3, claims 4, 5, 96-99, 101, and 174 each specify in pertinent part the following limitations: "creating the holographic grating at any one of the plural locations within the disk via a plane-wave light beam in conjunction with a counterpropagating focused light beam." Similarly, like claims 34, 35, and 178, claims 106-110, 114-116, and 175-178 each specify in pertinent part the following limitations: "creating a holographic grating at selected ones of the plural locations within the disk using a plane-wave light beam in conjunction with a counterpropagating focused light beam." Accordingly, claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116,

and 174-178, each require using light beams that travel in opposite directions to create a holographic grating.

The examiner fails to show a suggestion of the limitations in the prior art. "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." Para-Ordnance Mfg. v. SGS Importers Int'l, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995)(citing W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1551-53, 220 USPQ 303, 311-13 (Fed. Cir. 1983)). "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (citing In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)). "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." Id. at 1266, 23 USPQ2d at 1784,

(citing In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)).

As mentioned regarding the novelty of claims 1-3, 34, 35, and 178, Takeda shows beams traveling in similar directions. Similarly, although Bjorklund teaches writing a hologram, fig. 2, using "two separate beams (#1 and #2)", col. 1, l. 44, the beams do not travel in opposite directions. To the contrary, the beams #1 and #2 travel in similar directions. Specifically, figure 1a of the reference shows that both beams travel from the same beam splitter, Id. at ll. 44-45, to the same side of a rotating disk 2 of a recording medium. Id. at ll. 46-48. The examiner fails to allege, let alone show, that Murakami or Hugle remedies this defect.

Because Takeda and Bjorklund show beams traveling in similar directions, we are not persuaded that teachings from the prior art would appear to have suggested the claimed limitations of "creating the holographic grating at any one of the plural locations within the disk via a plane-wave light beam in conjunction with a counterpropagating focused light

beam" or "creating a holographic grating at selected ones of the plural locations within the disk using a plane-wave light beam in conjunction with a counterpropagating focused light beam." The examiner has impermissibly relied on the appellants' teachings or suggestions; he has not established a prima facie case of obviousness. Therefore, we reverse the rejection of claims 1-3, 5, 34, 35, 96-98, 101, 106-108, 110, 114, 116, 174-176, and 178 under 35 U.S.C. § 103(a) as obvious over Bjorklund in view of Takeda; the rejection of claims 4 and 177 under 35 U.S.C.

§ 103(a) as obvious over Bjorklund in view of Takeda further in view of Murakami; and the rejection of claims 99, 109, and 115 under 35 U.S.C. § 103(a) as obvious over Bjorklund in view of Takeda further in view of Hogle. Next, we address the grouping of claims 142, 143, 151, 152, 166, 168, and 171.

Grouping of Claims 142, 143, 151, 152, 166, 168, and 171

When the appeal brief was filed, 37 C.F.R. § 1.192(c)(7) (1997) included the following provisions.

For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from

the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and ... appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument ... why the claims are separately patentable.

In general, claims that are not argued separately stand or fall together. In re Kaslow, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983). When the patentability of dependent claims in particular is not argued separately, the claims stand or fall with the claims from which they depend. In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

Here, the appellants state, "[c]laims ... 142, 143, 151, 152, 166, 168, 171 ... stand or fall together." (Appeal Br. at 5.) Therefore, we consider these claims to stand or fall as a group and select claim 151 to represent the group. Next, we address the anticipation of claims 142, 143, 151, 152, 166, and 168.

Anticipation of Claims 142, 143, 151, 152, 166, and 168

The appellant argues, "the Examiner has failed to show that Takeda teaches the claimed plane-wave light beam or the counterpropogating focused light beam." (Appeal Br. at 11.) "The examiner respectfully disagrees." (Examiner's Answer at 4.)

"In the patentability context, claims are to be given their broadest reasonable interpretations. Moreover, limitations are not to be read into the claims from the specification." In re Van Geuns, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, the appellants attempt to read limitations from the specification into representative claim 151. The claim specifies no counterpropogating beam. Accordingly, the appellants' reliance on this limitation for patentability is not persuasive. Instead, representative claim 151 specifies in pertinent part the following limitations: "reading data elements using an electro-optical head by detecting one of (i)

a presence, or (ii) an absence of a holographic grating at the plural locations within the disk, using a plane-wave light beam." Accordingly, the claim requires using an electro-optical head, with a plane-wave light beam, to read data by detecting the presence or absence of a holographic grating at plural locations within a disk.

Takeda teaches the limitations by including the following disclosure.

FIG. 3 is a view showing an embodiment of the hologram apparatus which reconstructs, for example, voice signals from such a plurality of holograms. Referring to the figure, numeral 2 designates a disk whose surface is coated with a hologram recording material. A plurality of holograms 1 are formed on the surface. Each of the holograms 1 has a shape which can be substantially regarded as oblong. The holograms are closely arranged in such a manner that the long side of the oblong extends in the radial direction of the disk 2, while the short side extends in a direction substantially orthogonal to the radial direction. A light source 3 is arranged on one side of the disk 2, and generates a laser beam 4. Shown at 12 is a mask having a slit which is arranged between the light source 3 and the disk 2. The size of the slit is approximately equal to that of each hologram 1. Each hologram is, accordingly illuminated by the laser beam 4 through the rectangular slit of mask 12 which is substantially equal in size thereto.

As the disk 2 rotates in the direction of the arrow, each hologram is illuminated by the beam 4 from the slit of mask 12. Sound information corresponding to a predetermined short interval of time equal to the passing period of time is included as code information (for example, PCM code signals, digital signals etc. which are well known in themselves). That is to say, each hologram represents an encoded signal of one or more sampling signals at the time when the voice signals are sampled at a predetermined period of time. A hologram apparatus which records such sampling signals as holograms will be explained below in conjunction with the embodiment shown in FIG. 6. Each hologram 1 is illuminated by the laser beam 4, and the encoded signal 5 of the voice signal is reproduced as a reconstructed image of the hologram. Of course, position of the reconstruction is the focusing position of the hologram behind the disk 2. Since the encoded signal 5 is constructed by "on" and "off" modulation of a light beam as will be described [sic] below, it is read by means of a photodetector 6 (made up of, for example, a photodiode array). In this case, the encoded signal 5 is condensed on the photodetector 6 through an optical system 16. Output signals from the photodetector 6 become input signals to an information processor 15 (for example, a decoding unit which is constructed of a decoder, low-pass filters etc. as is well known). The encoded signals are decoded by the processor 15 into voice [sic] signals. The voice signals are emitted by a sound reproducing device 9 (for example, a loudspeaker) to appeal to the ear.

Col. 3, ll. 4-53. More specifically, by reproducing holograms 1 representing encoded signals, Takeda teaches reading data. By employing the photodetector 6 and information processor 15, the reference teaches using an electro-optical head to read

the data. By illuminating the holograms 1, which are on the disk 2, Takeda teaches detecting the presence or absence of a holographic grating at plural locations within a disk.

By using the laser beam 4 from the mask 12 to illuminate the holograms 1, the reference teaches using a plane-wave light beam to read data by detecting the presence or absence of a holographic grating at plural locations within a disk. It is true that Figure 3 of Takeda depicts the light from the light source 3 diverging as it travels toward the mask 12. More specifically, the light is drawn as expanding radially. The figure, however, also shows the laser beam 4 emerging from the slit in the mask 12 as a plane-wave light beam. Rather than diverging, the beam is shown as comprising parallel planes. Fig. 3.

In view of these teachings and showings, we are persuaded that the reference discloses the claimed limitations of "reading data elements using an electro-optical head by detecting one of (i) a presence, or (ii) an absence of a holographic grating at the plural locations within the disk,

using a plane-wave light beam." Therefore, we affirm the rejection of claims 142, 143, 151, 152, 166, and 168 under 35 U.S.C. § 102(b) as anticipated by Takeda. Next, we address the obviousness of claims 142, 143, 151, 152, 166, 168, and 171.

Obviousness of Claims 142, 143, 151, 152, 166, 168, and 171

We begin by finding that the references represent the level of ordinary skill in the art. See In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interference did not err in concluding that the level of ordinary skill was best determined by the references of record); In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("[T]he PTO usually must evaluate ... the level of ordinary skill solely on the cold words of the literature."). Of course, "[e]very patent application and reference relies to some extent upon knowledge of persons skilled in the art to complement that [which is] disclosed'" In re Bode, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977) (quoting In re Wiggins, 488 F.2d 538, 543, 179 USPQ 421, 424 (CCPA 1973)). Those persons "must

be presumed to know something" about the art "apart from what the references disclose." In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). With these principles in mind, we consider the appellants' argument and the examiner's reply.

The appellants argue, "the requisite motivation for combining the teachings of the cited references has not been provided." (Reply Br. at 5.) The examiner's reply follows.

"[I]t would have been obvious ... to modify Bjorklund such that the reference beam #2 illuminating the medium is a plane-wave light beam, as taught by Takeda. A practitioner in the art would have been motivated to do this for the purpose of increasing the size of the volume hologram within the medium, thereby making subsequent detection of the hologram easier." The examiner's point of this combination was that the lens in the path of reference beam #2 of Bjorklund is not necessary in view of Takeda. If the lens were removed, in accordance with the teachings of Takeda, then a plane-wave would illuminate the optical disk instead of a converged beam. (Examiner's Answer at 6.)

"Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor."

Para-Ordnance Mfg., 73 F.3d at 1087, 37 USPQ2d at 1239 (citing W.L. Gore & Assocs., Inc., 721 F.2d at 1551, 1553, 220 USPQ at

311, 312-13 (Fed. Cir. 1983)). "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" In re Beattie, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)). "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." Fritch, 972 F.2d at 1266, 23 USPQ2d at 1784 (citing Gorman, 933 F.2d at 987, 18 USPQ2d at 1888).

Here, the examiner fails to identify a sufficient suggestion to combine Takeda with Bjorklund. To the contrary, figures 1a and 1b of Bjorklund show that beams #1, #2, and #3 of the reference are each focussed by a respective lens. If the lens for beam #2 was removed, the beam would be out-of-focus. Being out-of-focus, it would not interact properly with beam #1, which would still be in-focus, to record a micro-interface pattern. See Bjorklund, col. 1, ll. 63-64.

The examiner's combination of references would require a change in the basic principles under which Bjorklund's processes were designed to operate. The examiner fails to allege, let alone show, that Murakami or Hogle remedies this defect.

Because Bjorklund's processes rely on focussed beams, we are not persuaded that the prior art would have suggested the desirability, and thus the obviousness, of combining Takeda's teaching of using a plane-wave beam with Bjorklund's teaching of recording a micro-interface pattern. The examiner impermissibly relies on the appellants' teachings or suggestions to piece together the teachings of the prior art.

Nevertheless, "a disclosure that anticipates under Section 102 also renders the claim invalid under Section 103, for 'anticipation is the epitome of obviousness.'" Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983) (quoting In re Fracalossi, 681 F.2d 792, 215 USPQ 569 (CCPA 1982)). Obviousness follows ipso facto, moreover, from an anticipatory reference. RCA Corp. V.

Applied Digital Data Sys., Inc., 730 F.2d 1440, 1446, 221 USPQ 385, 390 (Fed. Cir. 1984).

Here, as mentioned regarding the anticipation of claims 142, 143, 151, 152, 166, and 168, we are persuaded that Takeda anticipates the invention of representative claim 151. Accordingly, the claim is ipso facto obvious over Takeda alone or in combination with other references. Any teachings of Bjorklund, Murakami, or Hugle regarding the limitation are merely cumulative. Therefore, we affirm the rejection of claims 142, 143, 151, 152, 166, 168, and 171 under 35 U.S.C. § 103(a) as obvious over Bjorklund in view of Takeda.

We emphasize that our affirmances are based only on the arguments made in the briefs. Arguments not made therein are not before us, are not at issue, and are considered waived. Next, we address the nonobviousness of claims 144 and 153.

Nonobviousness of Claims 144 and 153

The appellants argue, "the combined teaching of Bjorklund, Takeda, and Murakami also lack any teaching or

suggestion of the claimed means for varying the diffraction efficiency of each holographic grating during its creation in the optical disk." (Appeal Br. at 14.) The examiner replies, "In Murakami, the different sizes and depths of the pits, which create the difference in the intensity of the reflected light, is created by a recording light having an intensity which is varied proportionate to the different size and depth of the pits, (i.e., the higher the intensity of the beam, the larger/deeper the pit)." (Examiner's Answer at 7-8.)

Claim 144 specifies in pertinent part the following imitations: "each holographic grating has a variable diffraction efficiency and wherein the detecting means is capable of producing a signal proportional to the diffraction efficiency of a holographic grating whenever detected, said signal being indicative of a value of the stored data element represented by the detected holographic grating." Similarly, claim 153 specifies in pertinent part the following limitations: "each holographic grating has a variable diffraction efficiency and wherein: the reading step comprises the step of producing a signal proportional to the diffraction

efficiency of a holographic grating whenever detected, said signal being indicative of a value of the stored data element represented by the detected holographic grating."

Accordingly, claims 144 and 153 each require creating holographic gratings by varying the diffraction efficiency of each grating.

The examiner fails to show a suggestion of the limitations in the prior art. He admits, "Bjorklund et al. as modified [by Takeda] ... fails to specifically teach means for creating holographic gratings with different, diffraction efficiencies." (Final Rejection at 4.)

Although Murakami teaches recording data on an optical disk, the data are not recorded as holographic gratings, let alone holographic gratings with different diffraction efficiencies. To the contrary, "data pits corresponding to the data are cut in the recording layer of the disk." Col. 1, ll. 36-37.

Because Murakami teaches cutting data pits rather than creating holographic gratings, we are not persuaded that teachings from the prior art would appear to have suggested the claimed limitations of "each holographic grating has a variable diffraction efficiency and wherein the detecting means is capable of producing a signal proportional to the diffraction efficiency of a holographic grating whenever detected, said signal being indicative of a value of the stored data element represented by the detected holographic grating" or "each holographic grating has a variable diffraction efficiency and wherein: the reading step comprises the step of producing a signal proportional to the diffraction efficiency of a holographic grating whenever detected, said signal being indicative of a value of the stored data element represented by the detected holographic grating."

The examiner impermissibly relies on the appellants' teachings or suggestions. He fails to establish a prima facie case of obviousness. Therefore, we reverse the rejection of claims 144 and 153 under 35 U.S.C. § 103(a) as obvious over Bjorklund in view of Takeda further in view of Murakami. Next, and last, we address the nonobviousness of claims 164 and 165.

Nonobviousness of Claims 164 and 165

The appellants argue, "the combined teaching of Bjorklund and Takeda also lack any teaching or suggestion of the multiplexing of holographic gratings using differing points of focus." (Appeal Br. at 12.) The examiner replies, "the focus spot of reference beam #2 can be repositioned to create holographic gratings at a plurality of locations along the optical axis of the object beam #1, i.e., at different depths within the disk medium." (Final Rejection at 3.)

Claim 164 specifies in pertinent part the following imitations: "the material comprising the optical disk is further capable of having multiple holographic gratings at each one of the plural locations within the disk, each holographic grating within each one of the plural locations being created with at a different point of focus." Similarly, claim 165 specifies in pertinent part the following limitations:

the material comprising the optical disk is further capable of having holographic gratings at plural sets of the plural locations within the disk, the holographic gratings within a particular set of the plural locations being created at a same point of

focus which is different from a point of focus used to create holographic gratings within other of the plural sets of plural locations.

Accordingly, claims 164 and 165 each require creating holographic gratings by changing the points of focus of a light beam.

The examiner fails to show a suggestion of the limitations in the prior art. Bjorklund does record micro-interference patterns "at several discrete depths beneath the surface of the recording medium" Col. 2, ll. 15-16. The recording, however, does not use different points of focus of a light beam. To the contrary, the recording "is accomplished by altering the angle between beams #2 and #1 for each depth." Id. at ll. 16-18. The examiner does not show that varying the angle between beams #2 and #1 for each recording depth changes the point of focus of the beams. The examiner fails to allege, let alone show, that Takeda, Murakami, or Hugle remedies these defects.

Because Bjorklund teaches varying the angle between beams rather than changing point of focus of the beams, we are not

persuaded that teachings from the prior art would appear to have suggested the claimed limitations of "the material comprising the optical disk is further capable of having multiple holographic gratings at each one of the plural locations within the disk, each holographic grating within each one of the plural locations being created at a different point of focus" or "the material comprising the optical disk is further capable of having holographic gratings at plural sets of the plural locations within the disk, the holographic gratings within a particular set of the plural locations being created at a same point of focus which is different from a point of focus used to create holographic gratings within other of the plural sets of plural locations." The examiner impermissibly relies on the appellants' teachings or suggestions. He fails to establish a prima facie case of obviousness. Therefore, we reverse the rejection of claims 164 and 165 under 35 U.S.C. § 103(a) as obvious over Bjorklund in view of Takeda.

CONCLUSION

In summary, the rejection of claims 1-3, 34, 35, and 178 under 35 U.S.C. § 102(b) and the rejection of claims 1-5, 34, 35, 96-99, 101, 106-110, 114-116, 144, 153, 164, 165, and 174-178 under 35 U.S.C. § 103(a) are reversed. The rejection of claims 142, 143, 151, 152, 166, and 168 under 35 U.S.C. § 102(b) and the rejection of claims 142, 143, 151, 152, 166, 168, and 171 under 35 U.S.C. § 103(a), however, are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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ERROL A. KRASS)	APPEALS
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